

REMARKS

Status of the Claims

Entry of this Amendment is proper under 37 C.F.R. §1.116 because the Amendment places the application in condition for allowance for the reasons discussed herein; and does not raise any new issues requiring further search and/or consideration as the amendments amplify issues previously discussed throughout prosecution. Entry of the Amendment is thus respectfully requested.

Claims 1, 2, 5-22, and 25-33 are pending, with claims 1, 25, and 32 being independent. Claims 1, 2, 6, and 25 have been amended to even more clearly recite and distinctly claim particularly preferred embodiments of the present invention. Support for the amendments may be found throughout the specification, including in the original claims. Therefore, no new matter has been added. Claims 3 and 4 have been canceled without prejudice to or disclaimer of the subject matter contained therein, and the dependency of claims 5 and 6 has been amended.

Applicants initially would like to thank the Examiner for indicating that claims 32 and 33 are allowed.

Applicants respectfully request the Examiner to reconsider and withdraw the outstanding rejections in view of the foregoing amendments and following remarks.

Claim Rejections Under 35 U.S.C. § 102

Claims 25 and 26 stand rejected under 35 U.S.C. § 102(b) as allegedly anticipated by U.S. Patent No. 2,877,257 ("Cain"). Without conceding the propriety of the rejection, independent claims 1 and 25 have been amended as provided above.

Cain relates to a process for the purification of hydrocarbon solutions of oxygenated organic compounds comprising acids and which also may contain dissolved or occluded metal contaminants such as *iron or iron compounds*. (Column 1, Lines 15-19). Cain discloses that the contaminated hydrocarbon organic chemical mixture can be the product produced by synthesis when carbon monoxide and hydrogen are reacted with a *promoted iron catalyst*. (Col. 1, Lines 26-36). Cain discloses that the product produced from such a process contains dissolved or occluded metal contaminants such as iron or iron compounds. (Col. 1, lines 51-54). With regard to the purification process, Cain discloses that a crude hydrocarbon synthesis oil is washed with an aqueous acid solution and this washing step is repeated until

no brown precipitate is produced on the addition of a suitable base to the acid extract. (Figure 2 and Column 2, Lines 19-25). Cain further discloses that the oil treated in this manner is then neutralized in a neutralization vessel with an aqueous caustic solution to produce an upper neutral oil layer containing dissolved chemicals. (Figure 2 and Column 2, Lines 36-38). Cain discloses that from the bottom of the neutralization vessel, a rich aqueous soap solution, free of iron and basic nitrogen compounds, is withdrawn. (Column 7, Lines 40-60 and Figure 2).

In contrast, independent claim 25 presently recites a method of removing contamination from a Fischer-Tropsch derived hydrocarbon stream. The method comprises conducting a Fischer-Tropsch process using a *catalyst comprising cobalt* to produce a Fischer-Tropsch derived hydrocarbon stream; passing the Fischer-Tropsch derived hydrocarbon stream to a treatment zone; passing an aqueous acidic stream to the treatment zone; and extracting *Al contamination* from the Fischer-Tropsch derived hydrocarbon stream by contacting the Fischer-Tropsch derived hydrocarbon stream with the aqueous acidic stream in the treatment zone at extraction conditions to form a mixed stream. At least one acidic extracted Fischer-Tropsch derived hydrocarbon stream is separated from a modified aqueous acidic stream and a third phase, wherein after the extraction step the contamination contained in the modified aqueous acidic stream and the third phase is greater than the contamination contained in the extracted Fischer-Tropsch derived hydrocarbon stream.

As disclosed in the present application, a third phase may form during extraction of the Fischer-Tropsch derived hydrocarbon stream with an aqueous acidic stream. The third phase is substantially distinct from the extracted Fischer-Tropsch derived hydrocarbon stream and the modified aqueous acidic stream. Contamination from the Fischer-Tropsch derived hydrocarbon stream may be concentrated into this third phase. (Page 9, Lines 17-27).

To anticipate a claimed invention under §102, a reference must teach each and every element of the claimed invention. See *Lindeman Maschinenfabrik GmbH v. American Hoist and Derrick Company*, 221 USPQ 481, 485 (Fed. Cir. 1984). It is respectfully submitted that in no way does Cain disclose or suggest the presently claimed process of claim 25.

It is respectfully submitted that in no way does Cain disclose or suggest the presently claimed method comprising conducting a Fischer-Tropsch process using a *catalyst comprising cobalt* to produce a Fischer-Tropsch derived hydrocarbon stream. It is further respectfully submitted that in no way does Cain disclose or suggest extracting *Al*

contamination from the Fischer-Tropsch derived hydrocarbon stream by contacting the Fischer-Tropsch derived hydrocarbon stream with the aqueous acidic stream in the treatment zone at extraction conditions to form a mixed stream. Moreover, it is respectfully submitted that in no way does Cain disclose or suggest separating at least one acidic extracted Fischer-Tropsch derived hydrocarbon stream from a modified aqueous acidic stream and ***a third phase***, wherein after the extraction step ***the contamination contained in the modified aqueous acidic stream and the third phase is greater than the contamination contained in the extracted Fischer-Tropsch derived hydrocarbon stream.***

As Cain does not disclose each and every element of the claims, it cannot anticipate the presently claimed invention of claim 25 or claims dependent thereon. Accordingly, for at least the above reasons, withdrawal of the rejection under 35 U.S.C. § 102(b) is respectfully requested.

Claim Rejections Under 35 U.S.C. § 103

Claim 27 stands rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Cain. Applicants respectfully disagree with the rejection; therefore, this rejection is respectfully traversed. Claim 27 depends on independent claim 25 and further limits claim 25 by specifying the extraction conditions.

The Office Action acknowledges that Cain “does not disclose the extraction conditions of claim 27,” but asserts, “It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process [of] Cain by utilizing the conditions of claim 27 because one would utilize any conditions that result in the removal of the contaminants disclosed by Cain.” (Page 5).

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP § 2143.

As described above, Cain relates to a process for the purification of hydrocarbon solutions of oxygenated organic compounds comprising acids and which also may contain dissolved or occluded metal contaminants such as ***iron or iron compounds***. (Col. 1, lines 15-

19). Cain discloses that the contaminated hydrocarbon organic chemical mixture can be a product produced by synthesis when carbon monoxide and hydrogen are reacted with a ***promoted iron catalyst***. (Col. 1, Lines 26-36).

Applicants respectfully submit that the presently claimed process is significantly different than the process of Cain. The presently claimed method for removing contamination from a Fischer-Tropsch derived hydrocarbon stream comprises conducting a Fischer-Tropsch process using a ***catalyst comprising cobalt*** to produce a Fischer-Tropsch derived hydrocarbon stream and extracting ***Al contamination*** from the Fischer-Tropsch derived hydrocarbon stream by contacting the Fischer-Tropsch derived hydrocarbon stream with the aqueous acidic stream in the treatment zone at extraction conditions to form a mixed stream. In contrast, in the process of Cain, the contaminated hydrocarbon organic chemical mixture is produced by synthesis when carbon monoxide and hydrogen are reacted with a ***promoted iron catalyst*** and dissolved or occluded metal contaminants such as ***iron or iron compounds*** are removed. As such, it is respectfully submitted that the presently claimed process comprising using a catalyst comprising cobalt and extracting Al contamination is significantly different than the process of Cain.

Applicants respectfully submit that the Fischer-Tropsch reaction conditions, including the catalyst, affect the product composition and affect any contamination that may be present in the product and may need to be removed. Accordingly, Applicants respectfully submit that it would not be obvious to one of skill in the art to use the purification methods of Cain (i.e., purification methods to remove dissolved or occluded iron or iron compounds from a hydrocarbon product produced using a promoted iron catalyst) to remove Al contamination from a hydrocarbon product produced using a cobalt catalyst.

Therefore, it is respectfully submitted that in no way does Cain disclose or suggest the presently claimed method for removing contamination from a Fischer-Tropsch derived hydrocarbon stream as recited in claim 27.

Accordingly, for at least the above described reasons, withdrawal of this rejection under 35 U.S.C. § 103(a) is respectfully requested.

Claims 1-18, 21, 30, and 31 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Cain in view of U.S. Publication No. 2002/0173556 ("Moore").

Applicants respectfully disagree with the rejection; therefore, this rejection is respectfully traversed.

As described above, Cain relates to the purification of hydrocarbon solutions of oxygenated organic compounds comprising acids and which also may contain dissolved or occluded metal contaminants such as *iron or iron compounds*. (Col. 1, lines 15-19). Cain discloses that the contaminated hydrocarbon organic chemical mixture can be a product produced by synthesis when carbon monoxide and hydrogen are reacted with a *promoted iron catalyst*. (Col. 1, Lines 26-36).

Moore is directed to a method for preparing liquid fuel in a hydrocarbon synthesis process, and more specifically for preparing a stabilized mixed fuel from a carbon source at a remote site, and tailoring one or more finished fuel products from the mixed fuel in order to meet local fuel requirements at a market site. (Page 1, Paragraph [0001]). Moore discloses mildly hydrotreating a stabilized product mixture at a market site to remove contaminants accumulated in the product during transportation. (Page 3, Paragraphs [0037] and [0054]). Moore is cited as disclosing “that F-T derived streams may be fractionated (i.e., distilled) and hydrotreated.” (Page 6).

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP § 2143.

As described above, Applicants respectfully submit that the presently claimed process is significantly different than the process of Cain. Applicants respectfully submit that even if there were some suggestion or motivation to combine Cain and Moore and a reasonable expectation of success, Cain and Moore, even when combined, do not disclose or suggest all the present claim limitations. Applicants respectfully submit that even if combined, Cain in view of Moore does not disclose or suggest the presently claimed method for removing contamination from a Fischer-Tropsch derived hydrocarbon stream. Applicants respectfully submit that even if combined, Cain in view of Moore does not disclose or suggest conducting a Fischer-Tropsch process using a *catalyst comprising cobalt* to produce a Fischer-Tropsch derived hydrocarbon stream and extracting *Al contamination* from the Fischer-Tropsch

derived hydrocarbon stream by contacting the Fischer-Tropsch derived hydrocarbon stream with the aqueous acidic stream in the treatment zone at extraction conditions to form a mixed stream. It is respectfully submitted that the presently claimed process comprising using a catalyst comprising cobalt and extracting Al contamination is significantly different than the process of Cain. Applicants respectfully submit that the Fischer-Tropsch reaction conditions, including the catalyst, affect the product composition and affect any contamination that may be present and may need to be removed. Accordingly, Applicants respectfully submit that it would not be obvious to one of skill in the art to use the purification methods of Cain (i.e., purification methods to remove dissolved or occluded iron or iron compounds from a hydrocarbon product produced using a promoted iron catalyst) to remove Al contamination from a hydrocarbon product produced using a cobalt catalyst.

Therefore, Applicants respectfully submit that even if there were some suggestion or motivation to combine Cain and Moore and a reasonable expectation of success, Cain and Moore, even when combined, do not disclose or suggest the presently claimed method for removing contamination from a Fischer-Tropsch derived hydrocarbon stream

Accordingly, for at least the above described reasons, withdrawal of this rejection under 35 U.S.C. § 103(a) is respectfully requested.

Claims 19, 20, and 22 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Cain in view of Moore as applied to claims 1-18, and further in view of U.S. Patent No. 6,476,086 ("Zhou"). Applicants respectfully disagree with the rejection; therefore, this rejection is respectfully traversed.

As described above, Cain relates to the purification of hydrocarbon solutions of oxygenated organic compounds comprising acids and which also may contain dissolved or occluded metal contaminants such as *iron or iron compounds*. (Col. 1, lines 15-19). Cain discloses that the contaminated hydrocarbon organic chemical mixture can be a product produced by synthesis when carbon monoxide and hydrogen are reacted with a *promoted iron catalyst*. (Col. 1, Lines 26-36).

Also as described above, Moore is directed to a method for preparing liquid fuel in a hydrocarbon synthesis process, and more specifically for preparing a stabilized mixed fuel from a carbon source at a remote site, and tailoring one or more finished fuel products from the mixed fuel in order to meet local fuel requirements at a market site. Moore is cited as

disclosing “that F-T derived streams may be fractionated (i.e., distilled) and hydrotreated.” (Page 6).

Zhou relates to a method for separating iron-based catalyst fines from hydrocarbon liquid/wax/catalyst slurry for Fischer-Tropsch synthesis processes by contacting and/or mixing the slurry with a coalescence enhancing treating solution to facilitate gravity separation and settling of such catalyst, and thereby yield a substantially clean hydrocarbon liquid/wax product. (Abstract). Zhou discloses that the treating solution includes a surface tension reducing agent, an agglutinating agent, and a coalescing agent, each in selected proportions in aqueous solution. (Abstract). Zhou is cited as disclosing filtration techniques used to separate solid contaminants from Fischer Tropsch derived streams.

As described above, Applicants respectfully submit that the presently claimed process is significantly different than the process of Cain. Moreover, as described above, even if there were some suggestion or motivation to combine Cain and Moore, and a reasonable expectation of success, Cain and Moore, even when combined, do not disclose or suggest all the present claim limitations. Zhou is cited merely as disclosing filtration techniques used to separate solid contaminants from Fischer Tropsch derived streams. Accordingly, as cited, Zhou fails to cure the many above-noted deficiencies with respect to Cain and Moore.

Therefore, for at least the above-noted reasons, Applicants respectfully request that the obviousness rejection of claims 19, 20, and 22 over Cain in view of Moore and further in view of Zhou be withdrawn.

Claims 28 and 29 stand rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Cain in view of Zhou. Applicants respectfully disagree with the rejection; therefore, this rejection is respectfully traversed.

As described above, Cain relates to the purification of hydrocarbon solutions of oxygenated organic compounds comprising acids and which also may contain dissolved or occluded metal contaminants such as *iron or iron compounds*. (Col. 1, lines 15-19). Cain discloses that the contaminated hydrocarbon organic chemical mixture can be a product produced by synthesis when carbon monoxide and hydrogen are reacted with a *promoted iron catalyst*. (Col. 1, Lines 26-36).

Also as described above, Zhou relates to a method for separating iron-based catalyst fines from hydrocarbon liquid/wax/catalyst slurry for Fischer-Tropsch synthesis processes by

contacting and/or mixing the slurry with a coalescence enhancing treating solution to facilitate gravity separation and settling of such catalyst, and thereby yield a substantially clean hydrocarbon liquid/wax product. (Abstract). Zhou is cited as disclosing filtration techniques used to separate solid contaminants from Fischer Tropsch derived streams.

As described above, Applicants respectfully submit that the presently claimed process is significantly different than the process of Cain. Zhou is cited merely as disclosing filtration techniques used to separate solid contaminants from Fischer Tropsch derived streams. Accordingly, as cited, Zhou fails to cure the many above-noted deficiencies with respect to Cain.

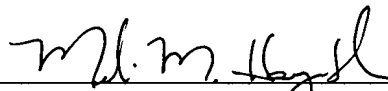
Therefore, for at least the above-noted reasons, Applicants respectfully request that the obviousness rejection of claims 28 and 29 over Cain in view of Zhou be withdrawn.

Conclusion

Without conceding the propriety of the rejections, the claims have been amended, as provided above, to even more clearly recite and distinctly claim particularly preferred embodiments of Applicants' invention and to pursue an early allowance. For the reasons noted above, the art of record does not disclose or suggest the inventive concept of the present invention as defined by the claims.

In view of the foregoing amendment and remarks, reconsideration of the claims and allowance of the subject application is earnestly solicited. In the event that there are any questions relating to this application, it would be appreciated if the Examiner would telephone the undersigned attorney concerning such questions so that prosecution of this application may be expedited.

Respectfully submitted,
BUCHANAN INGERSOLL PC

By: 
Melissa M. Hayworth
Registration No. 45,774

P.O. Box 1404
Alexandria, Virginia 22313-1404
(703) 836-6620

Date: November 18, 2005